



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

October 9, 1990

CERTIFIED RETURN RECEIPT REQUESTED
No. P 075 063 360

Mr. Jerry Glazier
5M Incorporated
P. O. Box 752
Hurricane, Utah 84737

Dear Mr. Glazier:

Re: 5-M Incorporated, Silver Reef Mine, M/053/002, Washington County, Utah,
Notice of Intent to Conduct Reclamation by the State of Utah, Division of Oil, Gas
and Mining

On March 1, 1989, by certified mail, the Division notified you of its tentative approval of 5M's final reclamation plan for the Silver Reef Mine, Washington County. That letter required the posting of a \$46,790 reclamation surety in order to secure final approval of the Silver Reef reclamation plan by the Division of Oil, Gas and Mining.

The Division's file contains a number of extensions to the March 1, 1989 requirement to post surety. At this time, there is no surety on file as required in the Notice of Tentative Approval.

Accordingly, due to your failure to provide the requisite surety, I am withdrawing the Notice of Tentative Approval, and notifying you that the Division intends to reclaim this site in the near future. Initial reclamation will utilize the forfeited Kerley Industries' bond for funds. Should this bond not be adequate to reclaim the post-1977 disturbance at this site, the Division may seek additional reclamation funding from 5M as successor in interest to Kerley.

You have an opportunity to appeal the Division's decision to reclaim the post-1977 disturbance at the Silver Reef Site, as provided in 40-8-16-(3).

Sincerely,

Lowell P. Braxton
Associate Director, Mining

vb
cc: T. Mitchell
W. Hedberg
MI78/125



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DOGM
MINERALS PROGRAM
FILE COPY

April 30, 1990

TO: File

FROM: Anthony A. Gallegos, Reclamation Engineer *aa*

RE: Site Inspection and Evaluation, 5-M Incorporated, Silver Reef Mine, M/053/002, Washington County, Utah

On April 12, 1990, Wayne Hedberg and myself visited the Silver Reef Mine site for the purpose of inspecting the mine facilities and prioritizing future reclamation activities at the site. General access to the site was limited by locked gates although access into the mine area was possible by vehicle or on foot. The area appears to have been subject to some vandalism with most of the PVC piping and fixtures near the processing facilities destroyed and the small buildings broken into. The facility names used in this memo are those found on the DOGM map of 12/13/88 and/or the Reclamation Bond Map.

We began the inspection by looking for the Quail Creek Open Pit Areas which were not detailed on the available maps. The areas are located at the southwest end of the properties south of the Main Substation. This area contains numerous adits and waste dumps along the White Reef formation. Two larger mine pits and waste dumps were found and rough measurements were taken of their dimensions, but they did not account for the 6.5 acres shown on the reclamation maps. It was our thought that the acreage estimate may have included all areas south of the Main Substation to where the road turns west near one of the two pits.

Moving north from the open pit areas, the next facility associated with the mine site is the Main Substation. The substation, power lines, two monitoring wells, existing fences and gates, and the maintenance building were found to have acceptable post-mining uses in the last reclamation estimate for this site. For this reason these items were not extensively examined during this visit.

North of the Main Substation are the milling and ore processing facilities. These facilities include electrowinning cells and spiral precipitators, agitation and thickener tanks, precipitation tanks, a rectifier building, and a scrap metal pile. Adjacent to the processing area are two asphalt lined collection ponds, a large earthen overflow pond, and a smaller earthen runoff pond. The northern primary leachate collection pond has

a walkway out over it and contained a greenish fluid with whitish-yellow crystallized precipitate around the fluid level and the periphery of the pond. The larger solution overflow pond contained some residual runoff and some trash. The small surface runoff pond contained water and had marsh type plants growing in it. The larger secondary overflow pond was mostly dry throughout, except for the southern end which is adjacent to the surface runoff pond. The overflow pond contained various plants, although the soils were crusted with white precipitate in areas. Most, if not all, of the metal tanks, precipitators, etc. were lined with fiberglass. Some of the tanks and several broken pipe fixtures had a dry, thick, white precipitate inside the fixtures or on the ground. Several of the electrowinning cells contained a green liquid with a crystallized surface layer on top. The four vertical standing tanks are the precipitation tanks and seem to be empty, for the most part, although the pipe fixtures coming out of the bottom are blocked with the same white precipitate found throughout the process piping.

North of, and adjacent to the primary leachate collection pond, is the main heap leach pad. The pad contains 2-4 ft of material and is also asphalt lined. At the north end and east of this pad, are two stockpiles of coarse ore material. North, and adjacent to the primary leach pad, is a small transformer station and shack. Next to this is an asphalt lined "test" leach pad area. It is divided in half with a catch basin at the eastern end. This test pad is the upper border of the entire asphalt lined area, with the lower border being the scrap metal area next to the processing facilities. The test leach pad area has no ore or tailings heaped on the asphalt liner.

North of the test leach pad are several piles of ore/mill tailings material, having different sizes and mineral characteristics. These piles are all near the agglomeration circuit which now consists of a bin and circular, mixer-type agglomerator. The northernmost pile is the largest, being made up of fairly coarse tailings material(?). It has a cap of finer material supporting some plant growth including a tamarisk tree. This pile is approximately 30-35 high at the crest and slopes down to 8 ft.

Northwest of the test pad are three pachuca tanks standing approximately 25 ft. high. These tanks are metal, open at the top, appear to be lined with fiberglass material and appear to be empty.

At the most northern end of the mine site is the Old Mill site with the fire assay building. The remaining mine facilities consist of an open pit with several stockpiles near the Savage Shaft and a powder magazine and open pit near the Doyle Shaft.

After examining the site, it was felt that public health and safety hazards should receive the highest reclamation priority, followed by the aesthetic aspects such as

Page 3
5-M, Inc.
M/053/002
April 30, 1990

removing structures, recontouring, regrading, etc.. The shafts were considered pre-law when the Division prepared the reclamation estimate, and for this reason were not considered in the list of priorities. Some of the adits in the Quail Creek area may also be pre-law, although this is unknown at this time.

The first priority items are: (1) Testing of the liquid in (a) the primary leachate collection pond, (b) the larger overflow collection pond, (c) the electrowinning tank vessels. (2) Testing the white precipitate found predominately on and around the processing structures for possible deleterious effects. (3) Testing the leached and unleached ore tailings for possible substances deleterious to human, animal or plant life. (4) Testing all transformers to be removed for PCBs. (5) Possible neutralization of the leached tailings. Once the tests have been performed there would be sufficient knowledge regarding the manner in which to best deal with these mine facilities.

The next priorities would be: (1) Removal and proper disposal of liquids in the ponds, ripping and backfilling or regrading these facilities to be non-impounding. (2) Removal of all liquids in the tanks and/or removal of all tanks associated with ore processing.* (3) Survey possible borrow areas for use in reclamation (topsoil and/or substitute plant growth medium). (4) Ripping the leach pads; regrading, covering, fertilizing and seeding the tailings. (5) Stabilizing the most hazardous open pit slopes by regrading, backfilling, or blasting. (6) Removal of all structures which do not have a valid post-mining use. The transformers would be dealt with here unless they are found to contain PCBs which would move them higher up in the priority list. (7) Ripping, covering, fertilizing and reseeding the remaining asphalt areas and access roads.

The Division estimate to reclaim the entire 5-M Silver Reef Mine was \$102,000 in 1993 dollars. Since the amount now held by the Division is approximately one-half of this amount, not only will reclamation activities need to be prioritized but also allocated within these priorities as the reclamation takes place.

* The metal structures may have some salvage value if the white precipitate material is not harmful and if the tonnage of metal will cover transportation costs.

jb

Attachment

cc: Dianne Nielson
Lowell Braxton
Wayne Hedberg
Holland Shepherd

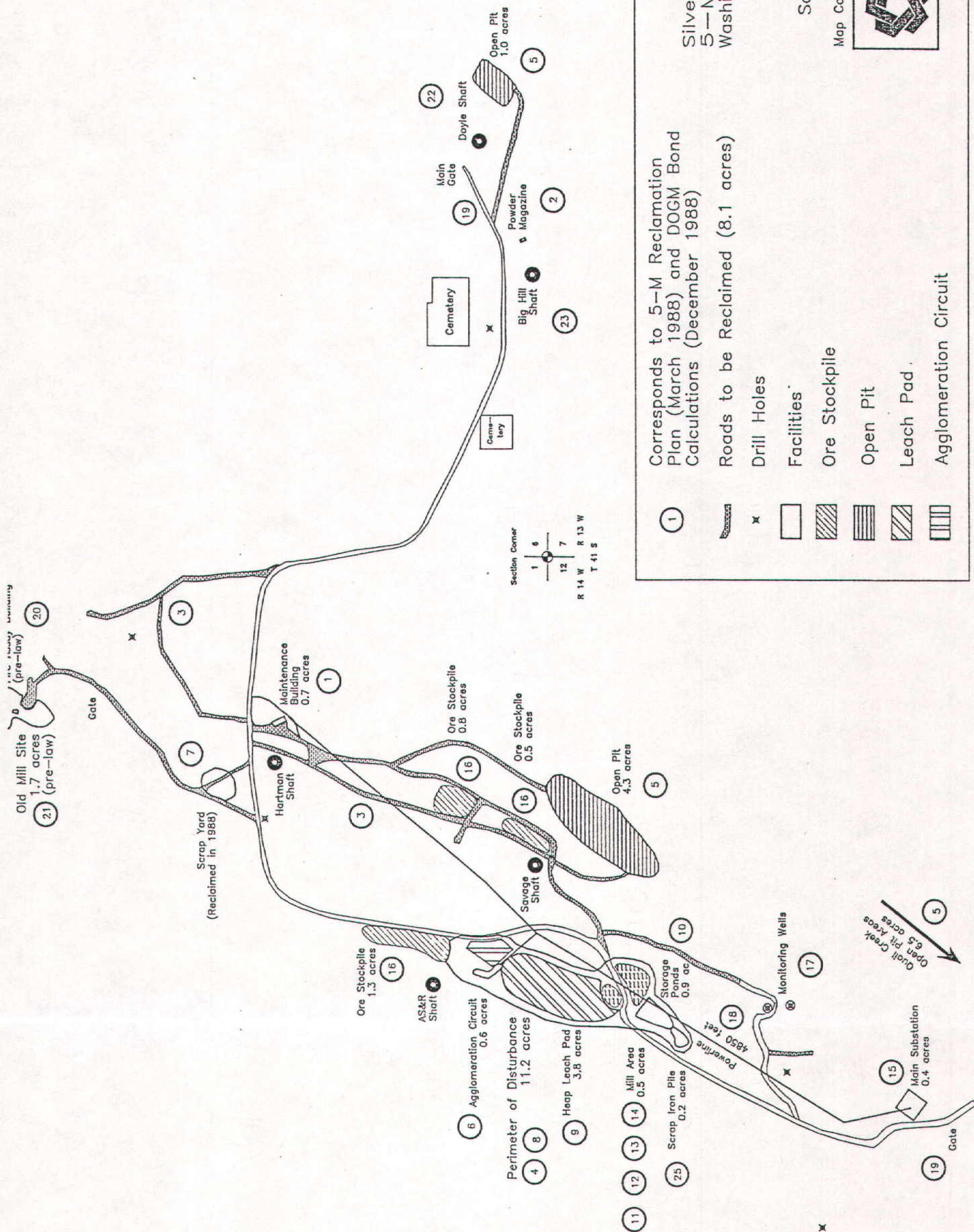
WMN6/1-3

Sampling of the 5-M Site

Silver Reef Mine
M/053/002

- Sampling of the 5-M site was performed by the Bureau of Solid and Hazardous Waste management on July 30 - August 1, 1990 (538-6170).
- Jason^KNolton is the person in charge of these samples.
- Test results are in but the data is being validated (QA & QC).
- A field activities report should be out in November, 1990, which will then be reviewed by the EPA.
- The final Analytical Results Report will probably be out in January 1991.
- DOGM is on the mailing list for these test results.

jb
MNM053002.1



Corresponds to 5-M Reclamation Plan (March 1988) and DOGM Bond Calculations (December 1988)

Roads to be Reclaimed (8.1 acres)

Drill Holes

Facilities

Ore Stockpile

Open Pit

Leach Pad

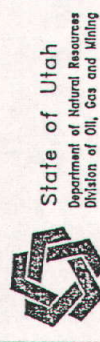
Agglomeration Circuit

Silver Reef Mine Site
5-M Incorporated
Washington County, Utah

M/053/002

Scale : 1" = 600'

Map Compiled December 13, 1988



MINE FILE CHRONOLOGY

5-M, INCORPORATED SILVER REEF SITE - M/053/002

(Revised October 16, 1990)

- Legal Description: Patented and unpatented claims - Sections 6 & 7, R41S, R13W and Sections 1, 11, 12, 13, 14, T41S, R14W.
- April 13, 1978 Original Mining & Reclamation Plan Application (MR-1) received from 5-M, Inc. for a new mine and mill at Silver Reef site. Meeting held at DOGM offices with operator. Supplemental maps, topographic information, etc. requested from the operator. Information to be provided within a week by 5-M.
- April 17, 1978 DOGM receives letter from 5-M, Inc. attorney, Mr. Walter Plumb. Follow-up to April 13th meeting. Indicated operator would rely upon statutory exemption (DOE) to continue operations until MRP is approved.
- May 19, 1978 Memo to File (Brian Buck). Area of operation intricately laced with accumulated disturbances of 100 + years mining. Regional area disturbances include >100 portals and shafts, numerous small open pits, 5 mills and many drill holes.
- 5-M controls most of the district (Still?). @ 1300 acres originally proposed for bonding. Proposing to strip mine and heap leach silver and copper ores. Silver and copper ores found in White Reef and Buckeye Reef.
- 5-M intending to apply for permit from NRC to mine and heap leach uranium/vanadium ore also. Uranium ore principally located: Pumpkin Point, Paulmer Hill and Tecumseh Hill. Some portals proposed for bottom of some proposed open pits. Underground development also contemplated.
- Two (2) principal complications identified by DOGM: 1) immediately north of the proposed minesite is a developing residential area; and 2) a culinary water well exists just downstream from the leach pond area (5-M is attempting to purchase same).
- May 25, 1978 Letter from concerned citizens in Leeds area.
- Objections and Concerns:

- (1) Destruction of White Reef and historic areas.
- (2) Mining-related impacts to adjacent residential area.
- (3) Drop in local Silver Reef resident property values.
- (4) Old mining ruins, mills, mines, artifacts and Indian ruins are and will continue to be destroyed.
- (5) 2 old cemeteries in area need preservation.
- (6) Esthetic and public safety concerns.

June 20, 1978	DOGM receives letter from SHPO, requesting that a cultural resource survey be conducted.
July 6, 1978	DOGM notifies 5-M of SHPO's <u>recommendation</u> , but doesn't <u>require</u> a survey of operator.
July 19, 1978	Public Notice of Tentative Approval sent to Newspaper Agency by DOGM for proposed operation. Involved permitting of @ 1352 acres.
August 31, 1978	Formal protest from Bennett Petroleum Corporation to the tentative approval decision. Objection based upon challenge to legal ownership of mineral and surface rights (unpatented mining claims & private surface).
September 8, 1978	DOGM letter to Bennett Petroleum Corporation addressing their formal protest concerns.
September 12, 1978	Letter from 5-M indicating enclosure of a map with revised bonding area for @60 acres of disturbance.
October 2, 1978	Amended Protest received by DOGM from Bennett Petroleum Corporation.

- October 4, 1978 DOGM letter to Bennett Petroleum in response to their amended protest, establishing November 19, 1978 as date for Board hearing to hear their formal protest.
- November 16, 1978 DOGM publishes formal notice for a November 29th Board hearing in response to receipt of Formal Protest from Bennett Petroleum Corp.
- November 30, 1978 DOGM letter reaffirming tentative approval decision and forwarding reclamation surety estimate of \$291,720 for 60 disturbed acres and a 30-year bond period.
- December 18, 1978 5-M letter responding to DOGM Nov. 30th letter. Operations to concentrate on underground development initially. Revised area of projected mining from 60 to 75 acres. Operator proposed only \$250/acre for the 75 acre mine disturbance.
- December 26, 1978 DOGM letter to 5-M indicating Board request for more information regarding:
- (1) Now proposing only 12 acres of 75 acres to be bonded for reclamation? Where would the 12 acres of 75 acres be located?
 - (2) Inflation rate must be accounted for in bond calculations.
- February 2, 1979 5-M responds to December 26, 1978 DOGM letter.
- February 8, 1979 Memo to file (Ron Daniels). Followed office meeting between DOGM and 5-M, discussions on bonding. Agreement reached, 5-M to pursue bonding of \$84,375 (1979 dollars) at \$1,125/acre for 75 acres. Inflation to be added to this figure.
- February 13, 1979 Letter from 5-M's attorney transmitting two (2) revised maps, "Amended Mining Program, Underground, Room and Pillar, Minimal Open Pit, Open Cut, Drawing #22." Involves 75 acres, including open cut areas A, B & C. 5-M to pursue surety bonding at \$1,125/acre cost. If this fails, then an escrow surety will be pursued.

February 22, 1979 5-M letter transmits a "Bond Map" to be used during February 28th Board hearing. (75 acres proposed). Board accepted the \$1,125/acre bond figure at the hearing.

January 11, 1980 5-M transmittal letter for 1979 Annual Progress Report. Indicates 40,000 tons ore placed on asphalt leach pad. Undergoing processing.

***NOTE:** NO BOND POSTED YET, OR FINAL APPROVAL INDICATED IN FILE TO COMMENCE MINING OPERATIONS.

January 22, 1980 Registered DOGM letter to 5-M regarding failure to post \$84,375 reclamation surety. Request immediate response, no mining activity permitted prior to posting of surety.

September 2, 1981 DOGM memo to file (Gil Hunt), based on August 19, 1981 field inspection. Company currently in process of negotiations for financial support. Operation is temporarily suspended. Solutions in process ponds to be processed upon reactivation. Most old shafts fenced, but some remain open. Work to date concerns removal, reprocessing and cleanup of old refuse ore stockpiles (no active mining of new ore yet?).

September 16, 1983 Registered DOGM letter to 5-M as a follow-up to an August 4, 1983 field inspection by technical staff. Noted active operations during inspection. Letter gave 30 days to post outstanding reclamation surety of \$84,375.

October 31, 1983 Registered DOGM letter to 5-M final request for reclamation surety to be received by December 2, 1983. Failure to meet deadline will result in issuance of an Order to Show Cause to revoke tentative approval.

November 7, 1983 Letter from 5-M attorney, stating client's ongoing objection to excessive bond amount and some doubts as to whether Mined Land Reclamation Act is within constitutional limits on regulating client's use of its own private patented mining claims. Propose a "reclaim-as-you-go" reclamation option, with only 10 acres of surface disturbance subject to open pit mining at any one time.

Propose a "Trust Deed" form of surety to the State on valuable real estate properties. (20 acres to be deeded over). Also stated current disturbance was within 2 acre exemption category and therefore, not subject to State bonding requirements.

- January 23, 1984 DOGM memo to file (Tom Tetting), follows a January 20th field inspection detailing amount of onsite disturbance associated with the operations conducted to date. Visual estimate of 12-15 acres made by technical staff. Recommend operator be brought before Board.
- February 14, 1984 DOGM memo to file (Mary Boucek), follows a February 7, 1984 meeting between 5-M and DOGM to discuss lack of reclamation bond. Operator was advised that no further mining activity would be allowed to occur until a surety is posted with DOGM. Operator may post a surety for the currently disturbed acreage, plus any additional acreage to be disturbed within the permit term on a "reclaim-as-you-go" basis. Operator agreed to revise the MR-1 form to reflect current operations, delineate disturbed acreage and estimate the appropriate bond amount within 30 days for DOGM review.
- February 29, 1984 DOGM memo to file (Mary Boucek), regarding February 22, 1984 phone call from Jerry Glazier (5-M, Inc.). Requested delay in submission of revised MR-1 form. 5-M in process of negotiating a joint-venture which would have an effect on plan development. Will submit map of disturbed areas and a revised bond estimate within the 30-day time frame. Management OK'd same with additional requirement to provide a date for submission of revised MR-1.
- March 12, 1984 5-M response letter received. Contained current map of all surface developments 5-M had completed to date. A \$55,210 bond estimate for 42.25 acres also included.
- March 21, 1984 DOGM memo to file (Pam Grubaugh-Littig), review of 5-M reclamation estimate. OK'd for 1984 dollars. A 10% inflation factor was added to yield: \$60,731 (1985), \$66,804 (1987), and \$73,485 (1987 dollars).

March 22, 1984	DOGM letter to 5-M accepting reclamation estimate and requiring <u>immediate</u> posting of \$55,210. Present surety would need to be escalated to cover inflationary cost for the next year or 3-year period.
May 1, 1984	DOGM memo to file (Steve Cox), regarding an onsite April 26, 1984 inspection to confirm cessation of operations.
May 1, 1984	Registered letter sent to 5-M giving operator until May 15, 1984 to post reclamation surety. Otherwise, an Order to Show Cause to be issued requiring bond posting and immediate reclamation of minesite.
May 15, 1984	A bond form and rules sent to Leavitt Insurance Agency representing 5-M, Inc.
May 15, 1984	DOGM sends letter to 5-M as a follow-up to a phone conversation which gave extension of surety deadline until May 30, 1984.
June 5, 1984	Memo to DOGM Director, discusses 5-M's failure to post the required reclamation surety and recommendation to issue an Order to Show Cause.
June 14, 1984	Memo to file (Pam Grubaugh-Littig), presents a revised 75-acre reclamation surety estimate based on 5-M's previous (\$1306/acre) calculations for 42.25 acres. Revised 75 acre estimate equals \$98,006 (1984 dollars).
July 11, 1984	Formal petition filed by DOGM Assistant Attorney General and directed to the Board of Oil, Gas and Mining against 5-M for failure to post reclamation surety. Scheduled for August 23, 1984 hearing date.
August 23, 1984	Board Hearing. A September continuance sought by DOGM attorney on behalf of 5-M petition, due to recent circumstances regarding 5-M joint-venture with Kerley Mining Company.
August 23, 1984	Registered letter sent to Valley National Bank of Arizona notifying them of Irrevocable Assignment of Certificate of Deposit (CD).

August 24, 1984	A \$55,210 Irrevocable Certificate of Deposit sent from DOGM to State Treasurer's Office for safekeeping (submitted by Kerley Industries).
August 24, 1984	Copy of signed Irrevocable Agreement between DOGM and Kerley Industries sent to Kerley.
August 29, 1984	Exploration NOI application received (EXP/053/007) from Kerley Mine and Mill Engineering, Inc. for a 12 hole drilling program.
September 17, 1984	Memo from DOGM to Assistant Attorney General regarding relief request for Kerley Industries from petition filed against 5-M Inc. Bond posted by Kerley assumes all leases and properties from 5-M. Suggest March 1, 1985, deadline for submission of a new MRP prior to allowing any further mining-related activities.
October 3, 1984	Kerley Mine and Mill Engineering, Inc. submits an amended exploration notice for an additional 15 holes.
October 24, 1984	Letter to Johnson & Higgins of Arizona with a copy of the Mined Land Reclamation Act Bond Form, MR-5. (Operator may replace Certificate of Deposit with a bond).
October 26, 1984	File memo (Pam Grubaugh-Littig) regarding call to Valley National Bank of Arizona, CD is automatically renewable. Bank stated Kerley is interested in another form of surety (Money Market Certificate). Pam will contact Kerley to inform them the CD is OK, as MMC in unacceptable as surety.
October 31, 1984	DOGM letter to Valley National Bank of Arizona authorizing them to transfer CD (renewable every 60-days) to a new CD for the same amount being renewable every 7-days. Old CD will be released when new CD received by DOGM.
January 7, 1985	File memo (Pam Grubaugh-Littig) regarding call to Valley National Bank of Arizona. CD is unchanged (still 60-day).
January 8, 1985	DOGM letter to 5-M requesting completion of Annual Operations and Progress Report (MR-5) and return it by 3/31/85.

January 11, 1985	DOGM received MR-9 forms for 26 holes (plugged). Form indicates all holes intercepted water 5-10 gpm at 100-130 ft. depth. No indication that any reclamation work performed.
April 19, 1985	DOGM forwards copy of the Act, regulations and MR-1 form to Kerley Industries. Immediate update of current development plans for the Silver Reef Property requested.
May 29, 1985	Staff memo to management regarding a May 23, 1985, field inspection of exploration program, performed in response to a citizen's complaint. Complaint concerned lack of adequate cleanup and reclamation of the exploration drill sites conducted by Kerley Industries (Mine and Mill Engineering, Inc.). Memo confirms need for some additional reclamation work.
June 12, 1985	DOGM certified letter sent to Kerley Industries requiring operator to complete required reclamation work, or address the discrepancy between DOGM field inspection and Kerley Industries MR-9 Completion Notice.
June 21, 1985	DOGM receives letter and <u>incomplete</u> MR-1 form from Kerley Industries. It contained supplemental information to the MRP previously submitted by 5-M. Operator indicated it was <u>not</u> a <u>final</u> NOI to commence mining operations. Complete NOI to be filed pending completion of intensive exploratory drilling on the property. Several new maps provided and supplemental text to describe current state of operations, small scale development and proposed reclamation plans.
July 19, 1985	Kerley Industries (Mine & Mill Engineering, Inc.) Exploration NOI received for 1985 drilling program. Proposal requests approval of 79 new drill holes.
July 26, 1985	DOGM letter to Mine and Mill Engineering, Inc. Exploration application determined incomplete. Request more detailed information and a response to DOGM June 12th letter before application is approved.

- August 21, 1985 Memo to exploration file regarding August 19, 1985 onsite field inspection of Mine & Mill Engineering, Inc. completed 1984 exploration program and the proposed 1985 drilling program. Operator committed to perform limited regrading and reseeding work on specific areas identified by DOGM staff during inspection.
- September 3, 1985 DOGM receives revised exploration map showing new locations for the proposed 1985 (75 hole) drilling program.
- September 27, 1985 DOGM letter sent to Kerley Industries requesting increase in reclamation bond to provide for reclamation costs in 1986 dollars (\$59,474).
- January 6, 1986 DOGM receives letter from Kerley Industries that they have terminated all interest in Silver Reef properties owned by 5-M Inc. 1985 drilling program was not conducted. No annual report submitted for 1985.
- NOTE*** Not known if operator ever completed the exploration reclamation work as committed to during the Division's August 19, 1985 onsite inspection?
- January 6, 1986 File memo (Pam Grubaugh-Littig) regarding status of CD. She called Valley National Bank of Arizona - No change in CD, it is still 60-day renewable for \$55,210.
- January 15, 1986 DOGM letter sent to Kerley Industries transmitting surety bond form to replace existing Certificate of Deposit. Request inflated bond to reflect reclamation costs in 1987 dollars (\$61,728).
- February 10, 1986 Kerley Industries acknowledges receipt of surety bond form. Company expects to have the current audited financial statement for enclosure to DOGM by end of April. Request existing CD remain in place until then.
- March 2, 1986 Article published in Deseret News concerning potential public health and safety problems and environmental consequences associated with "abandoned" Silver Reef mining operation.

March 12, 1986	Memo from technical staff to DOGM management concerning current status and recommendations for action against Kerley Industries and/or 5-M, Inc. for failure to comply with DOGM directives regarding completion of permitting requirements for Silver Reef Mine.
NOTE*	Page 2 of the March 12, 1986 memo incorrectly states Kerley Industries did not respond to the request for an updated MR-1 be submitted. On June 21, 1985, DOGM received an MR-1 form which was incomplete and unsigned. No documentation of DOGM review of the form or a response to Kerley Industries was found.
March 26, 1986	Letter to 5-M from Utah Water Pollution Control regarding pond and conditions at mine site. Requesting 5-M submit documentation of proof of review or approval, or submit plans and design specs by April 15, 1986.
April 3, 1986	DOGM memo to file regarding February 7, 1986 field inspection of Silver Reef Mine. Water quality samples were taken by DOGM from the solution ponds. Grab samples also taken upstream and downstream of the processing site disturbance. Lab analysis of primary solution pond indicated the following concentrated values: Aluminum (275,000 ppm), Cadmium (3400 ppb), Copper (524,000 ppm), Manganese (233,700 ppm), Mercury (376 ppb), Silver (125,000 ppm) and Zinc (333,500 ppm). Lab analysis from the stream samples indicated elevated dissolved salts downstream from the upstream sample, but reduced metals concentrations. A 10 to 20 fold increase in estimated stream flow was noted at the downstream site over the upstream estimate (5 gpm vs. 50-100 gpm).
June 12, 1986	DOGM letter to Kerley Industries requesting immediate posting of escalated bond by July 1, 1986, and a written explanation of future plans for development of the Silver Reef Mine.
July 23, 1986	Staff memo to DOGM Associate Director detailing specifics behind unpermitted Silver Reef Mine and recommendation for issuance of an Order to Show Cause requiring full and complete reclamation.

- August 5, 1986 Memorandum from Assistant Attorney General to DOGM Associate Director recommending that the operator be provided with the opportunity to request a hearing before the Board. If no hearing is requested, DOGM may refuse, withhold, or withdraw tentative approval of the Notice of Intention.
- September 18, 1986 DOGM certified letter to Kerley Industries giving responsible parties 60 days, from receipt of letter, to reclaim the Silver Reef Mine site. If no reclamation conducted, DOGM will approach Board, requesting bond forfeiture and reclamation by the State of Utah.
- September 30, 1986 DOGM transmits file correspondence and the Mined Land Reclamation Act to Kerley Industries legal counsel as per their request.
- November 6, 1986 State Health letter to 5-M, Inc. requesting written proof and documentation of company's receipt of State Health approval for the process containment ponds. Also indicates a joint state agency inspection scheduled for November 21, 1986.
- November 28, 1986 DOGM memo to file based upon November 21, 1986 joint agency site inspection of Silver Reef Mine. Water samples were collected by State Health and pH measures taken of the process ponds. Water Resources representatives verified drainages in and around mine site to note if they drained to the Quail Creek Reservoir. Abandoned Mine Reclamation personnel confirmed shafts and adits noted on USGS map within proposed mine development area.
- December 12, 1986 File Memo (Pam Grubaugh-Littig) regarding telephone inquiry by Kerley Industries attorney about Silver Reef status. No change in status of the mine and will probably go before Board sometime. Mentioned statement made by Jerry Glazier on November 21, 1986 that the agreement with Kerley had ended a couple of days earlier.
- December 29, 1986 Staff memo to Program Administrator, follow-up to DOGM September 18th letter to Kerley Industries which required mine site reclamation within 60-days. Apparent confusion as to

ultimate reclamation responsibility, 5-M or Kerley Industries.
Clarification requested. Brief chronology attached to memo.

- February 5, 1987 DOGM letter to Kerley Industries requesting completion and return of enclosed 1986 annual report by April 30, 1987.
- February 10, 1987 Staff memo to file regarding phone conversation with Arizona bank holding Certificate of Deposit for Kerley Industries. \$10,228 in interest had accrued on the \$55,210 bond and it was paid to Kerley Industries on February 3rd.
- February 27, 1987 Letter from State Health sent to 5-M Inc., again requesting design plans for the waste water ponds constructed on the Silver Reef mine site.
- March 19, 1987 Staff memo to file, discussing best estimate to reclaim the approximate 12 disturbed acres associated with the processing area at the Silver Reef Mine site.
- April 8, 1987 Memorandum to DOGM Director from Assistant Attorney General detailing bond forfeiture procedures of Kerley Industries reclamation bond.
- July 13, 1987 Memo from Administration to Minerals Team regarding assignment of tasks requisite to initiate reclamation of the Silver Reef Mine.
- July 17, 1987 Staff memo to Program Administrator discusses results of investigations made by DOGM technical staff in response to Administrator's July 18, 1987 memo regarding pre-reclamation resolution to outstanding concerns.
- July 21, 1987 Memorandum to DOGM Director from Assistant Attorney General enclosing a cashier's check for \$55,210 from Kerley Industries for reclamation of the Silver Reef Mine. Recommendation made to proceed with an Order to Show Cause or a petition against 5-M, Inc.

- September 3, 1987 State Health response letter to 5-M, Inc. details deficiencies outlined in plans submitted for their review. Request made for additional detailed design information of as-built mining operation and processing facilities.
- March 10, 1988 Follow-up to a February 17, 1988 onsite meeting with the operator. Certified DOGM letter to 5-M, Inc. details requirements that must be met in order to maintain the Silver Reed Mine site in the current state of suspended operations.
- March 25, 1988 5-M, Inc. response to DOGM's March 10, 1988 letter. Included a reclamation plan for the mine site involving the current onsite facilities and mine development. A petition to the Board of Oil, Gas and Mining was also received (improperly formatted) requesting that the forfeited Kerley Industries bond be used to defer some of 5-M, Inc. reclamation bonding obligation.
- April 4, 1988 Staff memo to file, details results of a March 31, 1988 field inspection with 5-M, Inc. representatives. Operator had initiated cleanup of the mine site and presented DOGM staff with copies of the March 5, 1988 reclamation package (as noted above). The operator committed to forward, within 2 weeks, Addendum D, which would cover ultimate final reclamation of the mine site.
- April 7, 1988 DOGM letter to 5-M, Inc. sent as follow-up to discussions and commitments made by operator during the March 31, 1988, onsite inspection. Indicated petition to Board must also be reformatted.
- April 27, 1988 DOGM receives, Addendum D, Final Reclamation Plan supplement, from 5-M, Inc.
- May 10, 1988 DOGM memo to file, details follow-up to May 6, 1988 onsite inspection. Cleanup work not completed yet, but progress is being made.
- August 11, 1988 DOGM forwards Conditional Tentative Approval letter to 5-M, Inc. as a result of technical review of operator's recent final reclamation plan.

- September 26, 1988 Memo to file as a follow-up to September 15, 1988 onsite inspection with operator. Memo detailed cleanup performed to date, discussion of DOGM Conditional Tentative Approval letter and Board's decision concerning 5-M's latest petition on Kerley Industries forfeited bond. DOGM to compute a detailed reclamation estimate for the current status of mining operations and forward same to operator.
- December 1, 1988 Staff memo to file details results of field inspection to help finalize details for computing reclamation cost estimate.
- December 27, 1988 Staff memo regarding reclamation cost estimate. Describes facilities with/without acceptable post-mining use and assumptions used in making the estimate. Total estimate is \$102,000 in 1993 dollars.
- January 23, 1989 DOGM forwards certified letter to 5-M, Inc. requesting written response to previous Conditional Tentative Approval letter. Request written response by February 15, 1989. Detailed DOGM reclamation estimate attached to letter (\$102,000) for current mining disturbances. Operator requested to provide additional \$46,790 reclamation surety in the interim (pending outcome of legal proceedings regarding acquisition of forfeited Kerley Industries reclamation bond).
- February 3, 1989 DOGM Letter to 5-M requesting completion and return of 1988 Annual Report before 4/7/89.
- February 13, 1989 5-M letter to DOGM regarding review of Reclamation Plan and DOGM letter 1/23/89, 8/11/88, 12/27/88. 5-M accepts terms and conditions of the letters with these exceptions: 1) surety can be reduced if transformers contain no PCBs, 2) minimum reclamation suspension period of 10 years with 6 years remaining through 1994 is minimum time allowed, 3) 5-M agrees to furnish borrow sites as needed for reclamation 4) 5-M agrees to disposal of toxic/hazardous material at an approved site as long as there is 5-M concurrence, 5) documentation of diligent legal pursuit forwarded under separate cover.

March 1, 1989	Registered letter to 5-M regarding notice of tentative approval, final reclamation plan. Agrees and clarifies exceptions mentioned by 5-M. Surety of \$46,790 must be posted by 5/1/89 before final approval can be issued.
March 7, 1989	Letter to DOGM from 5-M attorney with copy of complaint filed in courts enclosed as proof of diligent pursuit.
March 15, 1989	DOGM letter to Washington County Commission notifying them of tentative approval.
March 16, 1989	Mailing list for Notice of Tentative Approval notification (4 parties).
April 7, 1989	DOGM received copy of 3/7/89 BLM letter to Color Country Development Corp. regarding rights of way and water rights issues. Includes copy of application and previous correspondence.
March 14, 1989	DOGM letter to LaVarr Webb regarding request for water quality monitoring of well near/within the Silver Reef site. He was told DOGM does not regulate unless related to a mining operation.
April 7, 1989	Letter from LaVarr Webb regarding explanation of the dispute with 5-M over the water rights issues.
June 6, 1989	Registered letter to 5-M regarding follow-up of conditions of tentative approval. 5-M failed to post the reclamation surety by 5/1/89. No adverse comments received during public comment period. Failure to post surety within 30 days of this letter will result in issuance of an Order to Show Cause. Tentative approval may be revoked and immediate reclamation required.
June 21, 1989	Letter from 5-M requesting an extension of time period for posting of surety due to extenuating circumstances.
June 30, 1989	Registered letter to 5-M granting a time extension of 45 days from this letter (8/15/89) to provide surety. No further extensions will

be granted. Failure to post surety will result in issuance of an Order to Show Cause, revocation of tentative approval, and immediate reclamation required.

- August 8, 1989 File memo by Wayne Hedberg regarding phone conversation with 5-M on this date. 5-M obtained outside funding but the agreement has a 9/10/89 deadline for providing the funds. 5-M was told to draft a letter to DOGM explaining reasons for delay in posting surety. 5-M felt they would acquire the Kerley bond via litigation soon.
- August 9, 1989 Letter from 5-M requesting extension until 9/15/89 to post surety.
- August 24, 1989 Registered letter to 5-M granting an extension until 10/15/89 to resolve Kerley bond issue (\$55,210) and to provide DOGM with the required reclamation surety (\$102,000 total in 1993 dollars). No further extensions will be granted. Failure to meet this deadline will result in revocation of tentative approval and commencement of reclamation using the forfeited Kerley bond. Any addition expenses incurred by DOGM may be obtained from 5-M via legal channels. The Form MR-RC attached is to be completed and returned by 5-M.
- January 5, 1990 DOGM letter to 5-M requesting completion and submission of the attached annual report form for 1989.
- March 3, 1990 Annual report for 1989 received.
- April 30, 1990 File memo by Tony Gallegos regarding site inspection of 4/12/90. Describes current status of the mine site and lists public health and safety hazards as highest reclamation priority.

RECEIVED
APR 09 1987

DIVISION OF
OIL, GAS & MINING

AGREEMENT

The Utah Division of Oil, Gas and Mining ("Division"), by and through its undersigned Assistant Attorney General, and Kerley Engineering, Inc. ("Kerley"), formerly Mine and Mill Engineering, Inc., by and through its undersigned attorney, hereby agree as follows:

1. The Silver Reef mine site which is the subject of this agreement is located in the Harrisburg Mining District, Washington County, Utah, and is more fully described as follows:

Township 41 South, Range 13 West, SLBM
Portions of Sections 6 and 7

Township 41 South, Range 14 West, SLBM
Sections 1, 11, 12, 13, and 14

2. On or about August 23, 1984, Kerley assigned to the Division certificate of deposit no. 8002401 held by Valley National Bank of Arizona in the amount of \$55,210.00 as surety to ensure the proper and timely reclamation of the Silver Reef mine site.

3. On or about August 28, 1984, Kerley submitted to the Division a Letter of Intention to Commence Exploratory Drilling for the Silver Reef mine.

4. After August 28, 1984, but prior to January, 1986, Kerley conducted certain exploratory operations at the Silver Reef site.

5. By letter dated September 18, 1986, the Division directed Kerley to reclaim the Silver Reef site within 60 days or the Division would request that the Board of Oil, Gas and Mining cause the surety to be forfeited for the purpose of completing reclamation of the Silver Reef site.

6. Kerley currently has no access to the Silver Reef site and does not intend to conduct reclamation of the mine site.

7. In order for the Division's contractor to complete the required reclamation of the Silver Reef site within the 1987 construction season, the Division must take possession of the surety proceeds within the time set in paragraph #8 below.

8. Kerley will, within 10 days from the date of this agreement, provide written notice to Valley National Bank of Arizona directing that, upon receipt by the bank of the certificate of deposit no. 8002401, the bank will release the total amount of the certificate directly to the Division. Since time is of the essence, failure to so provide written notice and direction will obligate Kerley to the payment of liquidated damages in the amount of \$500.00 for each day in excess of the set 10 day period.

9. The Division will accept the above-stated surety proceeds as Kerley's total reclamation liability incurred by Kerley as a result of Kerley's exploration operations at the Silver Reef site. This in no way relieves Kerley of any reclamation responsibilities incurred as a result of disturbances created by Kerley subsequent to the date of this agreement nor

does this agreement purport to affect disturbances created by persons other than Kerley.

10. Upon receipt of the surety proceeds by the Division, the Division will execute a written release discharging Kerley from any further reclamation obligation arising under the Utah Mined Land Reclamation Act (§40-8-1 et seq., Utah Code Annotated (1953, as amended)).

Dated this _____ day of April, 1987.

*I'll get
this →*

DEAN MASSEY

BARBARA W. ROBERTS
Assistant Attorney General
124 State Capitol
Salt Lake City, Utah 84114

IRREVOCABLE ASSIGNMENT

This Irrevocable Assignment is made this 23rd day of August, 1984, by and between Kerley Industries, an Arizona Corporation, 2801 West Osborn Road, Phoenix, Arizona, in favor of the State of Utah, Department of Natural Resources, Division of Oil, Gas and Mining.

For consideration, receipt of which is acknowledged, by these presence, Kerley Industries, an Arizona Corporation, hereby sells, assigns, transfers and sets over to the State of Utah, Department of Natural Resources, Division of Oil, Gas and Mining, all its right, title and interest in and to that certain certificate of deposit issued by Valley National Bank of Arizona and standing in the name of Kerley Industries, an Arizona Corporation, in the principal and face amount of \$55,210.00, Certificate No. 8002401, authorizing the State of Utah, Department of Natural Resources, Division of Oil, Gas and Mining, or other duly authorized agency, to take possession thereof, receive payment of or proceeds from and to act as attorney in fact for Kerley Industries, an Arizona Corporation, in all respects pertaining thereto.

DATED this 23rd day of August, 1984.

KERLEY INDUSTRIES
An Arizona Corporation

By Ronald E. Ashcroft
Ronald E. Ashcroft
Vice-President

DIVISION OF OIL, GAS AND MINING

By Dianne R. Nielson
Dr. Dianne R. Nielson
Director

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, this 23rd day of August, 1984.

Norman C. Stout
Norman C. Stout
Notary Public

Date April 12, 1978

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

MINING AND RECLAMATION PLAN

(Other forms may be used in lieu of MR 2, provided
they contain the same information)

1. Name of Applicant or Company 5M, INCORPORATED
2. Proposed type of operation Mining and Milling
3. (a) Prior Land Use(s) Mining & milling operations
(b) Current Land Use(s) Mining & milling operations
Long term
(c) Possible or Prospective Future Land Use(s) mining & milling ops.
4. What vegetation exists on the land proposed to be affected Cacti,
Chapparal, very sparse Juniper/Cedar, grass, Sagebrush.
(a) Types and Estimated Percent cover or density: Barren to sparse
vegetation, with cover estimated at less than 10%.
5. What is the pH range of soil before mining? 8.5 to Neutral pH
Name of Person or Agency and method of determining pH Paul Dean Proctor;
Utah Geological & Mineralogical Survey - Geology of the Silver
Reef; Bulletin No. 44 (April 1953)
6. Site elevation above sea level 3700 to 4000 feet.
7. In case of coal, oil shale, and bituminous sandstone: N/A
Principal seam(s) and thickness(es) --
8. Estimated duration of mining operations Estimated in excess of 30 years.
9. Has overburden, waste or rejected materials been classified as acid or
alkali producing? (☒) Yes () No
Does the above material being moved have any other characteristics
affecting revegetation? Slightly alkaline to neutral
10. Will any underground workings or aquifers be encountered? (☒) Yes () No
Describe Continued mining operations and renovations
Is there an active discharge of water from abandoned deep mines on or
crossing the land affected? () Yes (☒) No If yes, describe
the quality of water being discharged. _____

11. Describe specifically a detailed procedure for: (**See supplement attached)
- (a) The mining sequence
 - (b) The procedure for constructing and maintaining access roads, to include a typical cross-section and a profile of the proposed road grades.
 - (c) The procedure for site preparation including removing trees and brush.
 - (d) The method for removing and stockpiling topsoil or disturbed materials.
 - (e) The method for the placement or containment of all disturbed materials, to include the method for handling of all acid or alkali-producing and toxic materials.
 - (f) A procedure for final stabilization of disturbed materials.

GRADING AND REGRADING

Specifically describe:

- (a) Typical cross-section of regrading.
- (b) The method of spreading topsoil or upper horizon material on the regraded area and indicate the approximate thickness of the final surfacing material.
- (c) What type of soil treatment will be utilized.
- (d) The method of drainage control for the final regraded area.
- (e) Maximum grading slope.

TESTING

1. Describe method for testing stability of reclamation fill material.

By use of test holes.

Describe method for the testing of soil that is intended to support vegetation

Analysis for alkalinity/acidity; other characteristics.

2. Describe any soil treatment employed as an aid to revegetation _____

The addition of fertilizers as necessary.

3. Describe surface preparation of areas intended to support vegetation:

Compaction stabilization test, harrowing, scarifying, grading,
seeding, planting, fertilization, drainage and erosion
control.

REVEGETATION

1. Revegetation to be completed by:

(x) Operator
() Soil Conservation District
() Private Contractor
() Other (specify) _____

() Hydroseeding
() Aerial Seeding
(x) Conventional or Rangeland Drilling
(x) Broadcast and Drag
() Other _____

2. Will Mulch be used? () Yes (X) No

Type: _____ Rate/Acre _____ lbs.

3. Revegetation Plan and Schedule -

Species	Rate/ Acre	Planting Location	Facing N-S-E-W	Season to be replanted
Sagebrush	**			
Grass	**			
Chapparal	**			
Cacti	**			
Juniper/Cedar	**			

4. Will affected area be subject to livestock or wildlife grazing?

(x) Yes () No Will vegetation protection be needed? Possibly
In the past, the BLM has allowed limited access by public stock
for grazing. Consideration is given to fencing entire area.

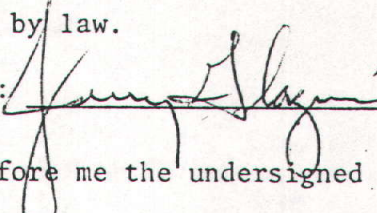
5. Will irrigation be used: (x) Yes () No Type Sprinkling System Irrigation, if needed.

6. Describe maintenance procedures for revegetation if needed, until surety release is granted. ** 5M, Inc., will maintain a program of
vegetation rehabilitation for the required 3 year period over
the disturbed land area, and with the objective of obtaining
a minimum of 70% growth as represented over the similar
existing ground cover in the area of the disturbed lands.

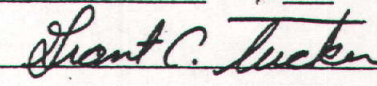
ACT 1053/002
SIGNATURE PAGE
- MINING AND RECLAMATION PLAN
from MR-2 Form

STATE OF UTAH
COUNTY OF WASHINGTON

I, Jerry Glazier, having been duly sworn
depote and attest that all of the representations contained in the foregoing
application are true to the best of my knowledge; that I am authorized to
complete and file this application on behalf of the Applicant and this
application has been executed as required by law.

Signed: 

Taken, subscribed and sworn to before me the undersigned authority
in my said county, this 12th day of April, 1978.

Notary Public: 

My Commission Expires: 8-7-81

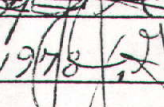
PLEASE NOTE:

Section 40-8-13(2) of the Mined Land Reclamation Act provides as follows:

"Information relating to the location, size, or nature of the deposit and marked confidential by the operator, shall be protected as confidential information by the Board and the Division and not be a matter of public record in the absence of a written release from the operator, or until the mining operation has been terminated as provided in subsection (2) of section 40-8-21."

Is confidential information contained herein?

YES ~~FALSE~~  (Initial)

NO No May 11th 1978  (Initial)

Sections desired to be maintained as confidential information -

ALL NONE

RECEIVED

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
Telephone: (801) 538-5340

JUN 21 1985

NOTICE OF INTENTION TO COMMENCE MINING OPERATIONS
and
MINING AND RECLAMATION PLAN

DIVISION OF OIL
GAS & MINING

Based on Provisions of the Mined Land Reclamation Act, Title 40-8, Utah Code Annotated 1953, General Rules and Regulations and Rules of Practice and Procedures, By Order of the Board of Oil, Gas and Mining.

Mine Name: Silver Reef Mine Plan Date: April 26, 1985
File No.: ACT/ 053 / 022 Date Received: _____
Operator: Kerley Industries DOGM Lead Reviewer: _____
Mineral(s) to be Mined: Silver, Copper

Please attach other sheets as needed and include cross-reference page numbers when used.

1. Name of Applicant or Company: Kerley Industries, Inc.
Corporation (X) Partnership () Individual ()
2. Address: Permanent: Mine & Mill Engineering, Inc/Kerley Industries
1675 Larimer Street Suite 800 Denver, CO 80202
Temporary: _____
3. Company Representative: Name: Howard T. Urband
Title: Chief Geologist
Address: SAME AS ABOVE Phone: 303-820-2222
4. Location of Operation: County(ies) Washington
Township(s): 41S Range(s): 13W Section(s): 6 & 7
Township(s): 41S Range(s): 14W Section(s): 1, 11, 12, 13, 14
Township(s): _____ Range(s): _____ Section(s): _____
5. Owner(s) of record of the surface area within the land to be affected:

Name: 5M Corporation Address: P.O. box 752, Hurricane, Ut 847
Name: _____ Address: _____
Name: Lawrence McMullen Address: Leeds, Utah
Name: _____ Address: _____

I hereby commit the applicant to comply with Rule M-10, "Reclamation Standards" in its entirety, as adopted by the Board of Oil, Gas and Mining on March 22, 1978.

The applicant will achieve the reclamation standards for the following categories as outlined in Rule M-10 on all areas of land affected by this mine, unless a variance is granted in writing by the Division.

<u>Rule</u>	<u>Category of Commitment</u>	<u>Variance Requested?</u>
M-10(1)	Land Use	
M-10(2)	Public Safety and Welfare	
M-10(3)	Impoundments	
M-10(4)	Slopes	
M-10(5)	Highwalls	
M-10(6)	Toxic Materials	
M-10(7)	Roads and Pads	
M-10(8)	Drainages	
M-10(9)	Structures and Equipment	
M-10(10)	Shafts and Portals	
M-10(11)	Sediment Control	
M-10(12)	Revegetation	
M-10(13)	Dams	
M-10(14)	Soils	

I believe a variance is justified on a site-specific basis for the previous subsections of Rule M-10 as indicated. A narrative statement explaining these concerns is attached.

STATE OF _____

COUNTY OF _____

I, _____, having been duly sworn depose and attest that all of the representations contained in the foregoing application are true to the best of my knowledge; that I am authorized to complete and file this application on behalf of the Applicant and this application has been executed as required by law.

Signed: _____

Taken, subscribed and sworn to before me the undersigned authority in my said county, this _____ day of _____, 19____.

Notary Public: _____

My Commission Expires: _____

ACT/053/002
SIGNATURE PAGE
- NOTICE OF INTENT TO COMMENCE MINING
from MR-1 Form

STATE OF UTAH
COUNTY OF WASHINGTON

I, Jerry Glazier, having been duly sworn
depose and attest that all of the representations contained in the foregoing
application are true to the best of my knowledge; that I am authorized to
complete and file this application on behalf of the Applicant and this
application has been executed as required by law.

Signed: Jerry Glazier
Jerry Glazier

Taken, subscribed and sworn to before me the undersigned authority
in my said county, this 12th day of April, 1978

Notary Public: Shant C. Tucker

My Commission Expires: 8-7-81

PLEASE NOTE:

Section 40-8-13(2) of the Mined Land Reclamation Act provides as follows:

"Information relating to the location, size, or nature of the deposit and marked confidential by the operator, shall be protected as confidential information by the Board and the Division and not be a matter of public record in the absence of a written release from the operator, or until the mining operation has been terminated as provided in subsection (2) of section 40-8-21."

Is confidential information contained herein?

YES Shant C. Tucker (Initial)

NO No May 11th 1978 (Initial)

Sections desired to be maintained as confidential information -

None

5M, Inc.
Silver Reef Mines

NR FORM 2 (Supplement)
Mining and Reclamation Plan

PARAGRAPH 11: Describe specifically a detailed procedure for:

(a) The Mining sequence:

The mining sequence will consist of a combination of open cut, underground mining, and existing dump's. First phase emphasis will be placed on removal of the dumps to the Heap-Leach facilities, and in addition to the open cut operations. Underground mining and renovations will progress with the later phases of development.

The open cut, mining technique will include a follow up method of replacing the disturbed reject materials as containments. Such use of the backfilled materials will allow the reclamation to follow close behind the mining operations. (See Drawing No. 11). *White Reef*

Open cut mining will at times include the removal of the entire Techumseh/Leeds strata as a large volume, low grade, operation. At other times, the selective, open cut, method will constitute a minimum of 5 to 1 waste-to-ore relation. For example, a 100' foot face of Techumseh/Leeds strata would equate to 80 feet of waste times 20 feet of ore. This would permit a maximum of 80 feet of waste to be placed on the slopes and reclaimed as appropriate. (See Drawing No. 11).

As the open cut benching reaches the valley floor, the alluvial soils will partially be available as fill cover for the backfilled materials being placed on the reclaimed slopes. Also, at the valley floor level the ore horizon goes underground. The mining operations will then convert to underground Room & Pillar methods of removal. (See Drawing No. 5). Emphasis, however, will be placed on following the old river channels possessing higher ore values underground, and will be a limited program with first priorities placed on the lateral continuation of the available surface stripping of the horizons as shown on drawing.

The underthrust is shown by the ASAR shaft as shown on Drawing No. 8. This presents still another potential underground ore horizon which may at some future time become economical to mine using conventional shaft and underground mining methods. Also of note, the Leeds Mine is a further example of underthrust mining in the Big Hill area. (See Drawing No's. 13 & 14).

(b) Access roads and grades:

Refer to Drawings No's. 4 & 6. 5M, Inc., equipment will be used to maintain and improve the access & tram roads with use of haul trucks, motor graders, front-end loaders, crushers, screening plants, water trucks, compactors, backhoes, etc.

NR FORM 2 (Supplement)
Mining and Reclamation Plan
Paragraph 11 (Cont'd.)

The necessary coarse base and fine surface gravels, required along with the cross drainage culverts, etc., explains the procedure for constructing and maintaining roads, drainage, etc. (See Drawing No. 6).

(c) Site preparation:

Vegetation involved at this mine site is minimal. Removal will be a part of a general leveling program for some of the low eroded areas requiring fill. Brush can be buried in the low areas with topsoil cover.

(d) Stockpiling topsoil:

Removal and placement of the very limited topsoil will be according to sites as described on Drawing No. 9. Placement will be in areas where erosion will be restricted, and drainage can be controlled as required.

(e) Placement of disturbed materials:

See subparagraph (a) above, and Drawing No. 11. Also, see 'Mining Plan - Supplement', Page 7, Toxic Materials.

(f) Stabilization of disturbed materials:

See 'Mining Plan (Supplement)', Page 4, Reclamation.

GRADING AND REGRADING:

(a) Cross-section of regrading:

See Drawing No. 5 & 11 - Surface covering, compacting, grading.

(b) Spreading topsoil:

Trucks, loaders, graders, land levelers (See Drawing No. 5 & 11.

(c) Soil treatment:

Possibly some fertilization for grasses, shrubs, trees, etc.

(d) Drainage control:

See Drawing No's. 11 & 15. - Controlling erosion & drainage.

(e) Maximum grading slope: 45 degrees.

● **SENDER:** Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and addressee's address. (Extra charge) 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:

JERRY GLAZIER PRES
5 M INCORPORATED
P O BOX 752
HURRICANE UT 84737

4. Article Number

P 075 063 360

Type of Service:

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address

X

6. Signature — Agent

X

7. Date of Delivery

10-11-90

8. Addressee's Address (ONLY if requested and fee paid)

UNITED STATES POSTAL SERVICE

OFFICIAL BUSINESS



SENDER INSTRUCTIONS

Print your name, address and ZIP Code in the space below.

- Complete items 1, 2, 3, and 4 on the reverse.
- Attach to front of article if space permits, otherwise affix to back of article.
- Endorse article "Return Receipt Requested" adjacent to number.



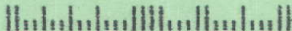
PENALTY FOR PRIVATE
USE, \$300

RETURN
TO



Print Sender's name, address, and ZIP Code in the space below.

STATE OF UTAH
NATURAL RESOURCES
OIL, GAS, & MINING
3 TRIAD CENTER, SUITE 350
SALT LAKE CITY, UTAH 84180-1203



P 075 063 360

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED

NOT FOR INTERNATIONAL MAIL

(See Reverse)

JERRY GLAZIER PRES

5 M INCORPORATED

Street and No.

P O BOX 752

P.O., State and ZIP Code

HURRICANE UT 84737

Postage

\$

Certified Fee

Special Delivery Fee

Restricted Delivery Fee

Return Receipt showing
to whom and Date Delivered

Return Receipt showing to whom,
Date, and Address of Delivery

TOTAL Postage and Fees

\$

Postmark or Date

10-10-90